

Analysis of Determinants of Poverty and Environmental Quality

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Abstract

The primary objective of this research is to examine the determinants of poverty and environmental quality in Indonesia. This study focuses on two endogenous variables, namely: a) Poverty (Y1), which is measured based on the proportion of individuals living in poverty per province, b) Environmental quality (Y2), which is measured using the Environmental Quality Index (IKLH). The exogenous variables in this study include: a) Labor force participation (X1), b) Investment level (X2), c) Education (X3), d) Income inequality (X4), e) Population (X5), f) The economy is measured by Gross Regional Domestic Product (GRDP) (X6). This study aims to determine the influence of each exogenous variable on poverty and environmental quality at the provincial level in Indonesia. The data used is annual data collected from official government agencies. This study employs panel data regression analysis, conducted with the aid of EViews 12 software. So the findings from the research are as follows. There is no significant influence between labor force participation and poverty in Indonesia, meaning that increasing labor absorption is generally associated with a decrease in poverty, because more people working can increase their income and standard of living. There is a significant relationship between investment and poverty in Indonesia, meaning that investment generally has a complex and varied impact on poverty levels. In theory, investment can drive economic growth, which in turn can reduce poverty by creating jobs and increasing incomes. There is no significant effect of education on poverty in Indonesia, meaning that education does not have a significant impact on reducing or overcoming poverty. This means that while education is important, other factors such as Economic, social, and political dimensions likewise exert a substantial influence on poverty levels. There is no significant effect of income inequality on poverty in Indonesia. This means that while income inequality may exist, increases or decreases in inequality do not significantly impact poverty levels. In other words, poverty is not directly affected by the magnitude of income inequality. No statistically significant relationship is observed between education and environmental quality in Indonesia. This means that low levels of education regarding the importance of maintaining environmental quality will does not exert a statistically significant effect on environmental quality. There is a significant correlation between income inequality and environmental quality in Indonesia. Increasing income inequality is often associated with increased CO₂ emissions and the deterioration of overall environmental quality. An expanding disparity between affluent and economically disadvantaged populations can lead to greater pressure on natural resources and increased pollution. There is a significant influence between population and environmental quality in Indonesia. Population growth has a significant impact on environmental quality, primarily due to increased pressure on natural resources and the environment. Population growth can lead to decreased air and water quality, ecosystem damage, and reduced availability of land and clean water. No statistically significant relationship is found between economic conditions and environmental quality in Indonesia.

Keywords: Poverty, Environmental Quality, Labor Force Participation, Investment, Education, Income Inequality, Population, Economy.

INTRODUCTION

The environment is a crucial and strategic part of the lives of living things, especially humans. The environment helps humans meet various needs, enabling them to remain in a given location and improve their well-being. There is a close relationship between humans and the environment, and both influence each other. Humans actively influence the environment, while the environment passively influences humans. Therefore, a healthy environment will positively impact the general well-being of the population living in a given area, and vice versa (Hidayati & Zakianis, 2022).

A quality environment can be seen from the synergy, interdependence, and balance of its elements or components. A quality environment also has the capacity to sustain biodiversity. A quality environment is formed when environmental conditions support a decent, comfortable life and ensure the health of humans and other living things (Hidayati & Zakianis, 2022).

The Environmental Quality Index (IKLH) is an initial description or indicator that can be used to accelerate the assessment of environmental conditions at a location and within a certain time period (Ginting et al., 2023).

IKLH functions to evaluate the effectiveness of environmental quality improvement programs, provide information to assist in the formulation of policies in the field of environmental protection and management, and facilitate communication with the community regarding environmental conditions (Hidayati & Zakianis, 2022).

The Environmental Quality Index (IKLH) value in Indonesia in 2011-2021 had an average value of 68.68 which according to the IKLH category was still in the moderate category, there were fluctuations in the IKLH value every year and the IKLH value had not yet been achieved according to the target stipulated in the National Medium-Term Development Plan (RPJMN) which was 68.96 and had not yet approached the IKLH value from the reference point of 100 proving that there were problems that occurred in the quality of the environment in Indonesia (Ministry of Environment and Forestry, 2021);

Table 1. Environmental quality index in Indonesia in 2023

Province	KPI	IKA	IKL	Environmental Impact Assessment
Aceh	90.94	75.58	71.09	76.93
North Sumatra	90.9	70.53	69.91	72.32
West Sumatra	90.53	73.24	71.09	74.11
Riau	90.89	70.07	69.91	71.08
Jambi	90.13	69.96	70.12	70.14
South Sumatra	90.15	69.71	69.47	70.91
Bengkulu	90.57	70.69	70.49	70.76
Lampung	92.49	68.01	70.88	68.56
Bangka Belitung Islands	87.76	72.78	66.11	72.22
Riau islands	88.04	71.85	62.20	73.01
DKI Jakarta	66.67	53.71	60.56	54.18
West Java	68.46	61.04	64.71	62.85
Central Java	81.39	66.95	66.93	66.90
DI Yogyakarta	86.35	66.16	65.20	66.06
East Java	89.01	67.68	66.93	68.80
Banten	84.73	61.76	67.82	62.58
Bali	88.99	71.35	71.94	71.12
West Nusa Tenggara	90.21	70.36	71.99	70.46
East Nusa Tenggara	92.03	74.13	73.18	73.81
West Kalimantan	93.91	71.49	71.71	71.69
Central Kalimantan	92.03	73.93	73.14	75.27
South Kalimantan	91.47	69.73	75.05	70.85
East Kalimantan	92.85	75.76	75.66	75.11
North Kalimantan	89.64	79.67	76.29	80.17
North Sulawesi	94.43	71.54	73.72	71.95
Central Sulawesi	90.58	77.66	74.51	78.16
South Sulawesi	92.83	71.97	74.06	73.07
Southeast Sulawesi	91.88	73.90	74.96	75.39
Gorontalo	93.52	76.32	76.03	78.05
West Sulawesi	93.33	74.66	75.95	75.72

Province	KPI	IKA	IKL	Environmental Impact Assessment
Maluku	92.47	77.11	77.80	77.40
North Maluku	93.19	76.08	78.77	77.46
West Papua	96.22	80.23	80.11	82.22
Papua	95.87	79.99	79.99	80.73

Source: Ministry of Environment (2023)

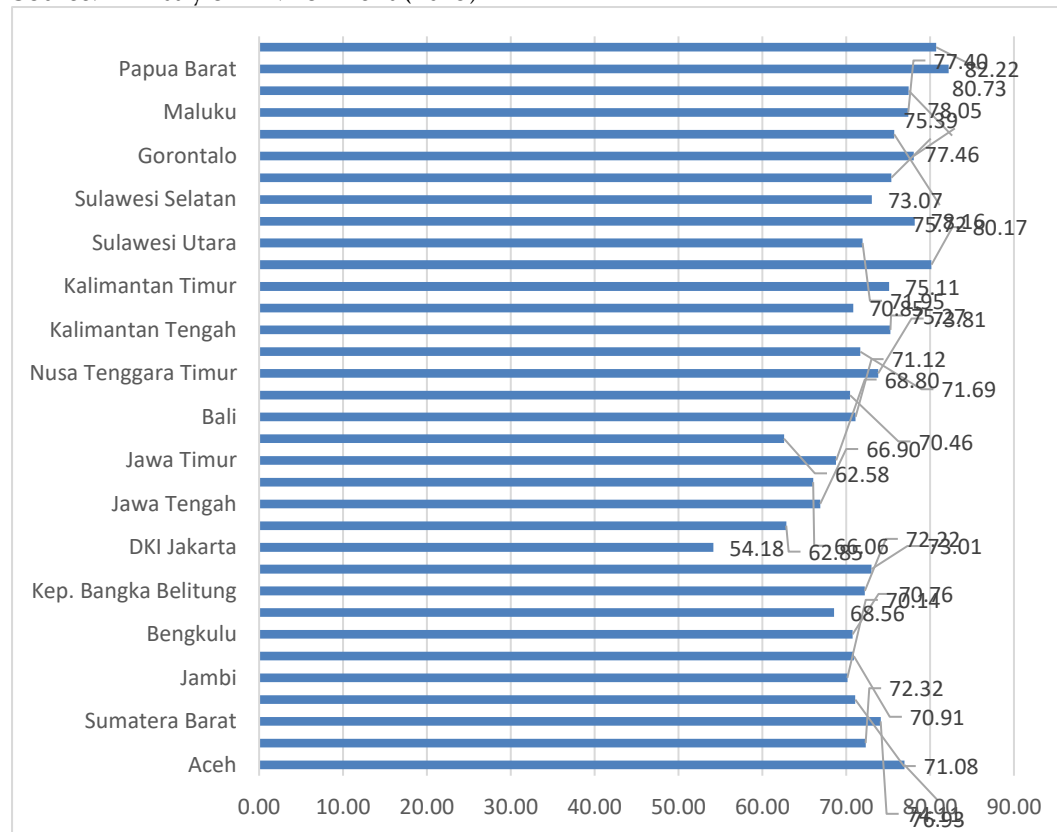


Figure 1 Environmental Quality Index 2023

Source: Ministry of Environment (2023)

Based on the image above, it shows that the air quality index of each province in Indonesia is in the good category, but there are several provinces in Indonesia that have a less than good environmental quality, such as in the province of DKI Jakarta. This is caused by many factories and a large number of vehicles, so that the air quality is not so good, for that reason it is necessary.

Indonesia faces diverse environmental challenges, encompassing environmental pollution, climate change, the exhaustion of natural resources, and the decline in biodiversity. The primary causes include human activities such as deforestation, waste pollution, and irresponsible infrastructure development. The impacts of these challenges include natural disasters, declining water and air quality, and threats to wildlife.

The government's solution to reduce air pollution and impact the health of the Indonesian people, in addition to the air quality index, the problem is the quality of clean water. Several provinces in Indonesia have poor water quality index figures, such as the provinces of Jakarta, West Java, Central Java. This is caused by household waste and factory waste as well as household waste. This must seek solutions for the government through policies and programs aimed at the Indonesian people. In addition to the quality of the environment, the topic of discussion this time is poverty. (Do Miswa & Kartiasih, 2025)

Poverty is a condition in which an individual or group of individuals is unable to fulfill fundamental necessities, including food, apparel, housing, education, and medical care. The extent of poverty can be evaluated using looking at the income of an individual or household below the established poverty line. (Sri Ulfa, 2022) The issue of poverty in Indonesia is a complex one that continues to attract attention from the government and society. Poverty in Indonesia has multiple dimensions, including extreme poverty, urban and rural poverty, and its impacts on various aspects of life. (Sri Ulfa, 2022) Poverty and

environmental quality are interconnected. Poverty is often a trigger for environmental degradation, as poor people may be forced to overuse natural resources to survive. Conversely, environmental degradation, such as pollution or resource depletion, can exacerbate poverty.(Do Miswa & Kartiasih, 2025).

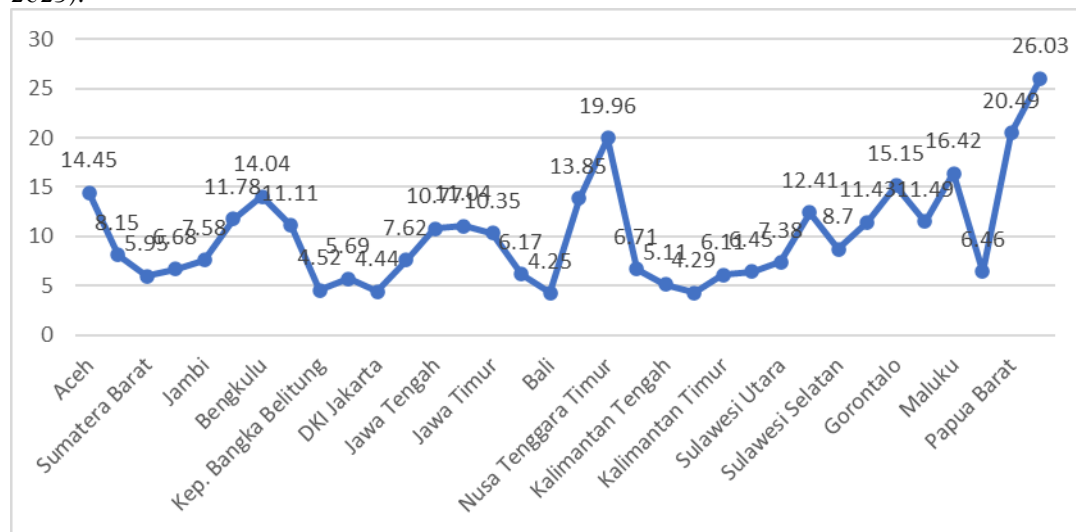


Figure 2. Poverty Percentage Level in Indonesia in 2023

Source: Central Statistics Agency (2024)

The data presented in the table indicate the number of individuals living in poverty across 34 provinces in Indonesia has fluctuated, but tends to increase. This is due to Covid 19, which forced the government to implement a lockdown policy, resulting in many employees being laid off to cut production costs, thus having an impact on increasing the number of unemployed, high poverty can have an influence on multiple dimensions of life, including health, education, economy, and social (Do Miswa & Kartiasih, 2025).

Poverty in Indonesia is a complex issue, with numerous interconnected factors. Low quality human resources, income inequality, limited employment opportunities, and lack of access to basic services such as education, medical services and public sanitation are some of the main causes. Furthermore, economic shocks such as the pandemic and climate change can also exacerbate poverty.

Economic impacts include increasing unemployment rates, many children dropping out of school, reduced purchasing power of the community. Health impacts include the emergence of various health problems, increasing mortality rates, social impacts include increasing crime rates, the emergence of various conflicts in society, poor people receive different treatment from rich people (Do Miswa & Kartiasih, 2025).

One of the factors that influence poverty and environmental quality is labor force participation, investment levels, education, income inequality, population, and the economy.

The workforce is anyone capable of performing work to produce goods and/or services, either to meet their own needs or those of the community. They are residents who have reached working age and are able to work, whether they are already employed, looking for work, or engaged in other activities such as school or housekeeping.(Adhika & Sentosa, 2020)

Poverty can significantly impact labor market outcomes, often creating a cycle of disadvantage. Studies show that growing up in poverty can lead to lower earnings as adults, which impacts education, skills development, and overall economic opportunities. Conversely, access to labor and economic opportunities can help lift people out of poverty.(Astot & Sentosa, 2022)

Investing is the act of investing capital or funds with the goal of generating future profits. This can involve purchasing assets such as stocks, bonds, property, or even investing in your own business. Essentially, investing is a way to put your money to work and generate profits without having to do any direct work.(Amar et al., 2022)

Investment generally has a negative impact on poverty levels. Increased investment can stimulate economic growth, create jobs, and increase incomes, thereby helping to reduce poverty.(Amar et al., 2022)

Education plays a crucial role in combating poverty by providing individuals with the skills and knowledge they need for economic growth and upward mobility. Research shows that increased levels of education correlate with higher incomes, better health outcomes, and greater access to social benefits. For example,

research shows that each additional year of schooling can result in an increase in income of:(Adhika & Sentosa, 2020)

Income inequality is a significant difference in income between individuals, groups, or regions within a society. It indicates that income is not distributed equally, resulting in some people earning significantly more than others. This inequality can be measured using the Gini Index, which indicates how far income distribution deviates from perfect equality.(Astot & Sentosa, 2022).

Income inequality exerts a substantial influence on poverty rates. An increase in income inequality corresponds to a rise in the number of people living in poverty. This is because income inequality creates differences in access to resources, such as education and employment opportunities, making it difficult for low-income groups to increase their income.(Kemeny et al., 2022)

Population is also identified as a factor influencing poverty. Arif (2013) stated that population growth contributes to higher poverty levels at both macro and micro scales. Gupta (2014) further emphasized that the impact is particularly evident in poor and developing nations, where population expansion is not matched by a corresponding growth in natural resources.(Adhika & Sentosa, 2020)

Dwiningmarni et al. (2018) reported that population growth adversely affects both unemployment and economic growth in Central Java. They further noted that population expansion, when coupled with low educational attainment, contributes to higher poverty levels. Quy (2016) similarly observed that unemployment is a determinant of poverty in Vietnam. Consistent with this, Dwiningmarni et al. (2018) identified unemployment as one of the key factors influencing poverty in Central Java Province. Economic expansion substantially impacts poverty alleviation efforts.(Adhika & Sentosa, 2020)

However, achieving high economic growth and poverty reduction has led to a decline in the relative importance of agriculture. Since the majority of poor people in developing countries live in rural areas, this raises inquiries concerning the significance of rural regions and their influence on improving individual livelihoods and thus reducing poverty.(Abdulrahman et al., 2025)

METHOD

Sugiyono (2018, p. 12) defines quantitative research as a methodological approach grounded in facts/symptoms/phenomena that are relatively fixed, concrete, observable, measurable, and symptoms are causal.

RESEARCH RESULT

Descriptive Statistics

The mean, standard deviation, variance, highest value, and lowest value of a research data set are all used to provide an overview or description through descriptive statistics (Ghozali, 2018). The Eviews 12 application program will be used to conduct the data analysis approach.

Descriptive Statistics Table

Descriptive Statistics						
	N	Range	Minimum	Maximum	Mean	Deviation
	Statistics	Statistics	Statistics	Statistics	Std. Error	Statistics
Labor Force Participation	339	0.19	0.08	0.27	0.00178	0.03283
Investment	339	1.11	-0.52	0.59	0.00811	0.14926
Education	339	0.04	0.24	0.28	0.00038	0.00700
Inequality	339	0.27	0.34	0.61	0.00277	0.05093
Population	339	0.08	0.76	0.84	0.00110	0.02025
Economy	339	1.57	0.00	1.57	0.01347	0.24804
Poverty	339	6.01	0.66	6.67	0.05294	0.97464

Environmental Quality	339	6.01	0.66	6.67	0.0535 5	0.98588
Valid N (listwise)	339					

Classical Assumption Test

The classical assumption test constitutes a crucial statistical requirement when using ordinary least squares (OLS)-based multiple linear regression analysis. In OLS, there is multiple independent variables with a single dependent variable.

Ghozali (2018) states that assessing model accuracy requires conducting several classical assumption tests, including multicollinearity, heteroscedasticity, normality, and correlation analyses.

a. Multicollinearity Test

According to Ghozali (2018), The purpose of the multicollinearity test is to identify whether correlations exist among the independent variables within the regression model. In assessing multicollinearity, if the correlation value for each variable is found to be below 0.85, it can be inferred that multicollinearity is absent.

Multicollinearity Test Table

	X1	X2	X3	X4	X5	X6
X1	1.000000	0.061520	0.171572	-0.080402	0.178465	-0.047166
X2	0.061520	1.000000	0.244195	0.016485	0.066820	-0.089957
X3	0.171572	0.244195	1.000000	-0.038349	-0.040891	-0.048284
X4	-0.080402	0.016485	-0.038349	1.000000	-0.000709	0.029395
X5	0.178465	0.066820	-0.040891	-0.000709	1.000000	-0.068224
X6	-0.047166	-0.089957	-0.048284	0.029395	-0.068224	1.000000

Source: Data Processing Results (2025)

From the data presented in the table in testing multicollinearity, the data reveal that if the value obtained from each variable of labor participation, investment level, population is below 0.50, it may be inferred that multicollinearity is absent.

b. Heteroscedasticity Test

The purpose of the heteroscedasticity test is to assess the presence of variance inequality between the residuals between pairs of observations within a regression model. (Ghozali, 2018). The heteroscedasticity test has two (2) parts, namely:

1. Cross Section Heteroscedasticity is heteroscedasticity that can be caused by company data.
2. Period Heteroscedasticity is heteroscedasticity that can be caused by year (time) data.

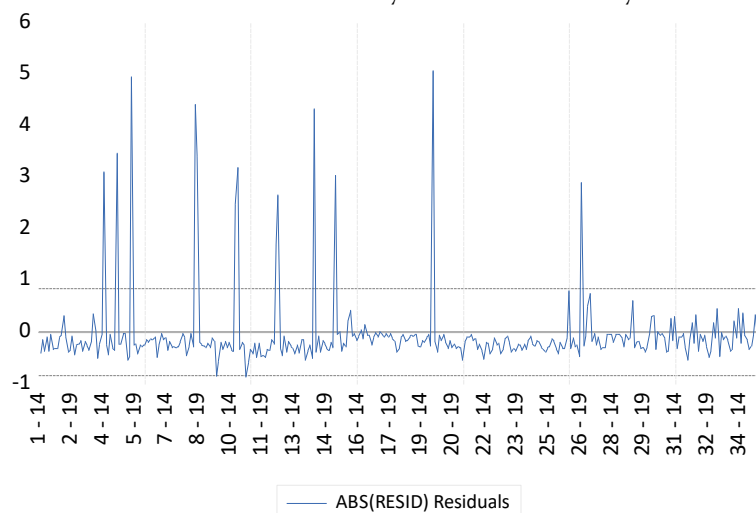


Figure 4.1. Heteroscedasticity Test

Source: Data Processing Results (2025)

Based on the image above, the residual plot (depicted in blue) remains within the range of 500 to -500, indicating uniform residual variance; thus, no evidence of heteroscedasticity is observed.

Panel Data Regression Analysis

This study employed panel data regression analysis. Its purpose is to provide answers to research questions regarding the interaction involving two or more independent variables in relation to the dependent variable. Before regressing the data, it is necessary to first test the classical assumptions. The regression model should be unbiased. The systematic formulation of the equation model for the panel data regression analysis is presented as follows:

$$\text{Poverty} = 5.8746761442 + 0.469781715382 * \text{Labor Force Participation} - 0.174105854081 * \text{Investment Rate} + 3.85573610647 * \text{Education} - 1.72609353825 * \text{Income Inequality}$$

The explanation is as follows:

1. The constant value of -5.87 means there are no variables. labor force participation, investment level, education, income inequality, then poverty will experience an increase of -587%.
 2. The coefficient value of labor participation is 0.469781715382, meaning that if other variables are constant, and the labor participation a 1% increase in the variable corresponds to a 46% rise in the poverty variable.
 3. The investment coefficient value is -0.174105854081, meaning that if holding other variables constant, a 1% increase in the investment variable leads to a reduction in the poverty variable by 17%.
 4. The value of the education coefficient is 3.85573610647, meaning that if other variables are constant, and the education variable increases by 1%, it will increase the poverty variable by 385%.
 5. The value of the income inequality coefficient is -1.72609353825, meaning that if other variables are constant, and the income inequality variable increases by 1%, it will reduce the poverty variable by 172%.
- $$Y_2 = -2.2452199197 + 1.09810559606 * X_3 - 0.271841187246 * X_4 + 0.203157339823 * X_5 - 0.0352397437939 * X_6$$
6. The constant value of -2.24 means there are no variables. education, income inequality, population, economy, then the quality of the environment will experience an increase of -224%.
 7. The value of the education coefficient is 1.09810559606, meaning that if holding other variables constant, a 1% rise in the education variable results in an increase in the environmental quality variable by 109%.
 8. The value of the income inequality coefficient is -0.271841187246, meaning that if other variables are constant, and the income inequality variable increases by 1%, it will decrease the environmental quality variable by 27%.
 9. The population coefficient value is 0.203157339823, meaning that if holding other variables constant, a 1% increase in the population variable leads to an increase in the environmental quality variable by 20%.
 10. The economic coefficient value is -0.0352397437939, meaning that if other variables remain constant and the economic variable increases by 1%, it will decrease the environmental quality variable by 3%.

Hypothesis Testing

The hypothesis testing stages in research are partial tests (t-tests) and determination tests (R²), as follows:

T-test

The t-test is applied to evaluate the extent to which each independent variable contributes to the variation in the dependent variable (Ghozali, 2018). At a 0.05 significance level, the t-test statistic is employed to ascertain whether the hypothesis is to be accepted or rejected. The basis for this decision is as follows:

1. If $t_{table} > t_{count}$ or if the probability value exceeds 0.05, H_0 is accepted and H_a is rejected, indicating that the independent variable does not exert a statistically significant impact individually on the dependent variable is to use this test.
2. If $t_{table} < t_{count}$ or the probability If the value falls below 0.05, H_0 is rejected and H_a is accepted, indicating that the independent variable exerts a statistically significant impact individually on the dependent variable is to use this test.

Poverty Hypothesis Test Table

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-5.874676	3.734460	-1.573099	0.1166
Partisipasi Tenaga ...	0.469782	0.452763	1.037589	0.3002
Tingkat Investasi	-0.174106	0.074857	-2.325850	0.0206
Pendidikan	3.855736	2.043554	1.886780	0.0601
Ketimpangan Penda...	-1.726094	1.268956	-1.360247	0.1747

Source: Data Processing Results (2025)

The explanation of the table is as follows:

1. Based on the table above, it shows the influence of labor force participation on poverty with a t-statistic value ($1.03 > 0.05$) with a significance of 0.302, meaning that there is no significant influence between labor force participation on poverty.
2. Based on the table above, it shows the influence of investment on poverty with a t-statistic value ($-2.32 < 0.05$) with a significance of 0.020, meaning that there is a significant influence between investment and poverty.
3. Based on the table above, it shows the influence of education on poverty with a t-statistic value ($1.88 < 0.05$) with a significance of 0.06, meaning that there is no significant influence between education and poverty.
4. Based on the table above, it shows the influence of income inequality on poverty with a t-statistic value ($-1.36 < 0.05$) with a significance of 0.1747, meaning no statistically significant relationship exists between income inequality and poverty.

Environmental Quality Hypothesis Test Table

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-2.245220	3.995444	-0.561945	0.5745
Pendidikan	1.098106	2.012635	0.545606	0.5857
Ketimpangan Penda...	-0.271841	1.299205	-0.209237	0.8344
Populasi	0.203157	0.182185	1.115117	0.2656
Perekonomian	-0.035240	0.075306	-0.467952	0.6401

Source: Data Processing Results (2025)

The explanation of the table is as follows:

5. Based on the table above, it shows the influence of education on environmental quality with a t-statistic value ($0.54 > 0.05$) with a significance of 0.58, meaning that no statistically significant relationship is found between education and environmental quality.
6. Based on the table above, it shows the influence of income inequality on environmental quality with a t-statistic value ($-0.20 < 0.05$) with a significance of 0.8344, meaning that there is no significant influence between income inequality on environmental quality.
7. Based on the table above, it shows the influence of population on environmental quality with a t-statistic value ($1.88 < 0.05$) with a significance of 0.06, meaning that no statistically significant relationship exists between population and environmental quality.
8. Based on the table above, it shows the influence of the economy on environmental quality with a t-statistic value ($-0.46 > 0.05$) with a significance of 0.64, meaning there is no significant influence between the economy and environmental quality.

b. Determination Coefficient Test (Adjusted R²)

The coefficient of determination (R²) test measures the extent to which the model explains variations in the dependent variable. The R² value ranges from zero to one ($0 < R^2 < 1$).

A low R² value indicates that the independent variables have a very limited ability to explain the dependent variable. However, R² has a known limitation: it is biased toward the number of independent variables included in the model. Each time an additional variable is incorporated, the R² value increases regardless of whether that variable significantly affects the dependent variable. For this reason, R² was applied in this study. The closer the R² value is to one (1), the greater the model's ability to explain the dependent variable (Ghozali, 2018).

Determination Coefficient Test Table

R-squared	0.032546
Adjusted R-squared	0.020994
S.E. of regression	0.962973
Sum squared resid	310.6512
Log likelihood	-467.0924
F-statistic	2.817390
Prob(F-statistic)	0.025279

Source: Data Processing Results (2025)

From the data presented in the table, the adjusted R-squared value is 0.020994, meaning that labor force participation, investment, education, income inequality, population and the economy contribute 2% to poverty and environmental quality.

DISCUSSION

The influence of labor force participation on poverty

Labor force participation, as measured by the Labor Force Participation Rate (TPTK), has no significant effect on poverty levels, or may even have the opposite effect. This means that even if the The Labor Force Participation Rate (TPTK) is elevated, indicating a larger proportion of the population is employed), it does not necessarily mean poverty will decrease. In fact, in some cases, an increase in the TPAK can even be accompanied by an increase in the poverty rate.

Matter these findings align with the study by Erika et al. (2022), which reported that the workforce significantly influences poverty in Purwakarta Regency over the 2011–2020 period. The regional government should persist in enhancing the availability of employment opportunities through its policies to accommodate the annually growing workforce, thereby enabling residents of Purwakarta Regency to earn an income and fulfill their basic needs.

The impact of investment on poverty

Investment influences poverty, meaning that increased investment can contribute to poverty reduction. This is because investment can stimulate economic growth, create jobs, and increase community income, which can directly reduce the population living below the poverty line. These findings are consistent with Helly Suharlina's (2020) study, which revealed that investment and unemployment had a positive yet statistically insignificant impact on poverty in districts and cities within West Kalimantan Province, whereas education and economic growth demonstrated a significant influence on poverty in the same region.

The Influence of Education on Poverty

Education may not directly lead to poverty reduction, but it plays a greater role in helping individuals acquire the skills and knowledge necessary for employment and increased income.

Education can be one very important factor, but poverty is also influenced by other factors such as employment opportunities, government policies, and general economic conditions. Education may make a small but important contribution, but poverty is still influenced by other, stronger factors. There may be cases where education does not always result in significant increases in income, especially if individuals face barriers such as discrimination or lack of employment opportunities. These findings align with the study of Kamaruddin (2020), which indicates that educational attainment has no statistically significant effect on the number of poor people in West Sumbawa Regency in 2015-2019.

The impact of income inequality on poverty

Income inequality exerts no influence on poverty, meaning that despite significant income differences in society, poverty does not change significantly. This can occur due to various factors, such as ineffective policies to reduce poverty, dependence on certain sectors, or limited access to economic opportunities for poor groups.

Matter This is consistent with studies by Hindun et al. (2019), Badriah (2019), and Suparman et al. (2021) revealed that income inequality (income distribution) significantly influences poverty. The findings of Y. Sari et al. (2021) also outlined a positive association between income inequality and poverty in Jambi Province.

Nisa et al (2020), The main cause of poverty is low income and most Low-income households tend to have larger family sizes, which exacerbates the economic conditions of those living near the poverty line, accompanied by a decline in income and overall welfare inequality.

Meanwhile, in different findings described by several researchers, namely Oktaviani et al (2022), in the case of Central Java, income inequality was not significant for poverty.

In line with these findings, Wira Hendri & Iswandi (2022) found that negative inequality had no significant impact on poverty in West Nusa Tenggara. Conversely, Wijayanto (2016) found that income inequality had a significant negative impact in North Sulawesi.

According to Sugiyarto et al. (2016), the relationship between inequality and poverty is pragmatic, meaning that inequality exacerbates poverty, or that inequality is a form of poverty. This is consistent with the conditions in several provinces in Indonesia, which tend to have higher levels of inequality than the national average, and which tended to experience increasing inequality in 2020 and 2021, such as Yogyakarta Special Region and Gorontalo (Gini index > 0.4). This inequality aligns with the percentage of the poor population, which tended to be higher and increased in 2020 and 2021.

The influence of education on environmental quality

Research shows that educational inequality, particularly between urban and rural areas, can negatively impact environmental quality. This may be because groups with more limited access to education have less knowledge and awareness of environmental issues, making their behavior less likely to support environmental conservation efforts.

This means that if literacy, education and socialization regarding preserving the environment are low, it will does not exert a statistically significant effect on enhancing the quality of the environment.

These findings are consistent with the study by Ariaga (2022). The results of the study showed that there was a relationship

A positive correlation between education level and knowledge level with healthy living behavior and home environment quality in Southeast Aceh Regency, Lawe Alas District. The insignificant correlation means that the higher educational attainment and level of knowledge, the lower the health-oriented lifestyles and the quality of the home environment, based on the closeness of the correlation in the high category.

The impact of income inequality on environmental quality

Income inequality (the income distribution gap) generally has a significant impact on environmental quality. The greater the inequality, the worse the environmental quality, as wealthier groups with higher incomes and higher living standards tend to exploit natural resources more, which can lead to environmental degradation. Furthermore, inequality can lead to air, water, and noise pollution, as well as greater climate change impacts on low-income and vulnerable groups.

Matter These findings align with the study by Adelia (2024), which revealed that issues such as income inequality, high population density, and industrialization also contribute to environmental degradation. This study seeks to examine the effects of economic growth, income inequality, population density, and industrialization on environmental quality in Indonesia.

The influence of population on environmental quality

Population growth has significant negative impacts on environmental quality, including reduced clean water supplies, air pollution, land conversion, and increased pollution.

Matter These findings are in line with the study by Akhirul (2020), which indicates that rapid population growth will impact the environment, resulting in a decline in environmental quality. This is evident in rapid population growth, which leads to a decrease in clean water supplies, a decrease in clean air quality, and the conversion of land for residential use. This can be addressed through sustainable development.

The influence of the economy on environmental quality

Economic growth often increases environmental degradation, such as increased waste and pollution, and conversely, economic decline can also reduce environmental pressures. An unsustainable economy can cause various environmental problems, such as pollution, climate change, and ecosystem damage. Conversely, a sustainable and environmentally based economy can help enhance environmental quality. Matter These findings are consistent with the study by Jericko Gustinov Gho (2024), this research shows that economic activities, especially transportation, have a positive effect on environmental quality and the influence of other factors, namely population density, can also have a positive or negative effect depending on the region and its characteristics, and the number of residents has a significant impact, both positive and negative, on the environment.

When As population increases, two possibilities can occur: environmental quality could improve or degrade. This indicates that each province, with its varying population, has its own characteristics—so it cannot be generalized that one region will produce similar results or impacts as another. Although the processing industry and household consumption does not exhibit a statistically significant impact.

CONCLUSION

Drawing from the aforementioned research findings, the conclusions are as follows.

1. There is no significant influence between labor force participation and poverty in Indonesia, meaning that increasing labor absorption is generally associated with a decrease in poverty, because more people working can increase their income and standard of living.
2. There is a significant relationship between investment and poverty in Indonesia, meaning that investment generally has a complex and varied impact on poverty levels. In theory, investment can drive economic growth, which in turn can reduce poverty by creating jobs and increasing incomes.
3. There is no significant effect of education on poverty in Indonesia, meaning that education does not have a significant impact on reducing or overcoming poverty. This means that while education is important, other factors such as economic, social, and political factors also play a significant role in poverty levels.
4. There is no significant effect of income inequality on poverty in Indonesia. This means that while income inequality may exist, increases or decreases in inequality do not significantly impact poverty levels. In other words, poverty is not directly affected by the magnitude of income inequality.
5. No statistically significant relationship exists between education and environmental quality in Indonesia. This means that low levels of education regarding the importance of maintaining environmental quality there is no evidence of a statistically significant association between education and environmental quality.
6. A statistically significant correlation exists between income inequality and environmental quality in Indonesia. Increasing income inequality is often associated with increased CO₂ emissions and the deterioration of overall environmental quality, alongside an expanding disparity between affluent and economically disadvantaged groups can lead to greater pressure on natural resources and increased pollution.
7. There is a significant influence between population and environmental quality in Indonesia. Population growth has a significant impact on environmental quality, primarily due to increased pressure on natural resources and the environment. Population growth can lead to decreased air and water quality, ecosystem damage, and reduced availability of land and clean water.
8. There is no significant influence between the economy and environmental quality in Indonesia.

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